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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/733,066	12/11/2003	Patrick A. Thomas	57958US002	7828
32692	7590	06/10/2005	EXAMINER	
3M INNOVATIVE PROPERTIES COMPANY			CRUZ, MAGDA	
PO BOX 33427			ART UNIT	
ST. PAUL, MN 55133-3427			PAPER NUMBER	
			2851	

DATE MAILED: 06/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

10/733,066

Applicant(s)

THOMAS ET AL.

Examiner

Magda Cruz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 December 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 December 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3/24/04 & 12/08/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: IDS filed on 04/13/05.

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: element 62 (Figure 4). Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. In addition to Replacement Sheets containing the corrected drawing figure(s), applicant is required to submit a marked-up copy of each Replacement Sheet including annotations indicating the changes made to the previous version. The marked-up copy must be clearly labeled as "Annotated Sheets" and must be presented in the amendment or remarks section that explains the change(s) to the drawings. See 37

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CFR 1.121(d)(1). Failure to timely submit the proposed drawing and marked-up copy will result in the abandonment of the application.

Specification

3. The disclosure is objected to because of the following informalities: there is no description of element 62 (Figure 4).

Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-2, 6-9, 11-12, 15-17, 19-22, 24 and 27 are rejected under 35

U.S.C. 102(b) as being anticipated by Moshrefzadeh et al.

Moshrefzadeh et al. (US Patent Number 6,636,355 B2) discloses:

- Regarding claim 1, a first light transmitting substrate (Figure 3, element 320) having opposite first (i.e. upper side of element 320, Figure 3) and second major surfaces (i.e. lower side of element 320, Figure 3), the first surface (i.e. upper side of element 320, Figure 3) having a plurality of structures (Figure 3, element 310; i.e. waveguides) defining a plurality of cavities therebetween (Figure 3, element 340; i.e. interstitial regions); a

second substrate (Figure 3, element 330) having opposite first (Figure 3, element 332) and second major surfaces (Figure 3, element 334) and an optical material (i.e. light absorptive layer; column 7, line 16) disposed on the first surface (Figure 3, element 332) of the second substrate (Figure 3, element 330); and positioning the first surface of the first substrate (i.e. upper side of element 320, Figure 3) proximate the first surface (Figure 3, element 332) of the second substrate (Figure 3, element 330) to at least partially fill the cavities (Figure 3, element 340; i.e. interstitial regions) with the optical material (i.e. light absorptive layer; column 7, line 16).

- Regarding claim 2, the optical material is a light absorbing adhesive (column 8, lines 44-46).
- Regarding claim 6, the second substrate (Figure 3, element 330) is a shield (i.e. cover the tops of the waveguides; column 7, line 9).
- Regarding claim 7, positioning the first surface (i.e. upper side of element 320, Figure 3) of the first substrate (Figure 3, element 320) toward the first surface (Figure 3, element 332) of the second substrate (Figure 3, element 330) to at least partially fill the cavities (Figure 3, element 340; i.e. interstitial regions) with the optical material (i.e. light absorptive layer; column 7, line 16) includes completely filling the cavities with the optical material (column 7, lines 63-64).

- Regarding claim 8, each structure (Figure 3, element 310; i.e. waveguides) is light diffusive (i.e. transmissive of light; column 7, lines 20-22).
- Regarding claim 9, the optical material (element 332) is light absorbing (column 7, line 16).
- Regarding claim 11 and 24, a light transmitting substrate (Figure 3, element 320); a plurality of structures (Figure 3, element 310) disposed on the substrate (Figure 3, element 320), the structures (Figure 3, element 310) defining a plurality of cavities (Figure 3, element 340; i.e. interstitial regions) therebetween; a shielding substrate (Figure 3, element 330) disposed proximate the plurality of structures (Figure 3, element 310); and an optical adhesive disposed between the shielding substrate and the plurality of structures (column 8, lines 44-46), the optical adhesive at least partially filling the cavities (column 7, lines 63-64).
- Regarding claim 12, air partially filling the cavities (column 1, lines 51-54).
- Regarding claim 15 and 27, the optical adhesive (i.e. light absorptive layer includes an adhesive; column 8, lines 20-21) completely fills the cavities (i.e. absorptive layer material between the waveguides can be pushed out to the surrounding areas of said waveguide, therefore, filling the cavities; column 8, lines 18-20).

- Regarding claim 16, each structure (i.e. waveguides) has a base and a plurality of walls, which narrow the structure as the walls extend from the base (column 1, lines 64-66).
- Regarding claim 17, each structure (i.e. waveguides) is a rib (column 9, line 4).
- Regarding claim 19, the optical adhesive (i.e. light absorptive layer includes an adhesive; column 8, lines 20-21) includes a black pigment (column 6, lines 16-20).
- Regarding claim 20, the film is rigid (column 2, lines 62-63).
- Regarding claim 21, each structure (i.e. waveguides) is light diffusive (column 4, lines 64-66).
- Regarding claim 22, the optical adhesive is light absorbing (column 8, lines 18-21).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 3, 13 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moshrefzadeh et al.

Moshrefzadeh et al. discloses a plurality of structures (i.e. waveguides) having a first refractive index (column 3, line 15); and an optical material (i.e. light absorptive layer that resides at or near the front portions of the waveguides; column 2, line 66 through column 3, line 1) having a second refractive index in the interstitial regions (column 3, line 16); wherein the second refractive index being less than the first refractive index (column 2, lines 3-4).

Moshrefzadeh et al. (US Patent Number 6,636,355 B2) teaches the salient features of the present invention, as explained above, except a plurality of structures comprising a host material that has a first refractive index. However, Moshrefzadeh et al. discloses that a larger index of refraction difference at the wavelength/interstitial region interface can be achieved by filling the entire interstitial region with an absorptive material (column 1, lines 55-58).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to utilize a host material (i.e. area filled with absorptive material; column 1, lines 56-57), like the one disclosed by Moshrefzadeh et al. for the purpose of increasing screen efficiency as well as allow for screen designs that further enhance contrast, provide for larger viewing angles (Moshrefzadeh et al., column 1, lines 58-61).

8. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moshrefzadeh et al.

Moshrefzadeh et al. (US Patent Number 6,636,355 B2) teaches the salient features of the present invention, as explained above, except a first light transmitting

substrate having a third refractive index, the third refractive index being greater than the second refractive index. However, Moshrefzadeh et al. discloses a light transmitting substrate (column 2, line 7). Furthermore, Moshrefzadeh et al. discloses that the index difference depends on the material (column 3, lines 7-11).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to utilize a first light transmitting substrate having a third refractive index to increase the efficiency of the screen (Moshrefzadeh et al., column 3, lines 19-20).

9. Claims 5, 14 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moshrefzadeh et al.

Moshrefzadeh et al. (US Patent Number 6,636,355 B2) teaches the salient features of the present invention, as explained above, except a difference between the first refractive index and the second refractive index of at least about 0.06. However, Moshrefzadeh et al. discloses a first index of refraction that is about the same as a second index of refraction (column 6, lines 4-5).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to have a small difference between the first refractive index and the second refractive index, for the purpose of having a material that is substantially transmissive of a desired range of wavelengths and that optionally can provide desired mechanical integrity to the screen (Moshrefzadeh et al., column 5, lines 57-60).

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10. Claims 10 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moshrefzadeh et al.

Moshrefzadeh et al. (US Patent Number 6,636,355 B2) teaches the salient features of the present invention (including a film that is rigid (column 2, lines 62-63)), except a first light transmitting substrate and the second substrate being flexible. However, Moshrefzadeh et al. discloses a light absorptive material (Figure 3, elements 332 and 334) that can be pressed onto the waveguides before curing and then hardened. Therefore, at the point before the light absorptive material is hardened, is a flexible material (Moshrefzadeh et al., column 8, lines 24-26).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to utilize a flexible substrate, like the ones disclosed by Moshrefzadeh et al., for the purpose of laminating the light absorptive layer on the waveguides in a desirable manner (Moshrefzadeh et al., column 8, lines 30-31).

11. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moshrefzadeh et al. in view of Zimmerman et al.

Moshrefzadeh et al. (US Patent Number 6,636,355 B2) discloses a light transmitting substrate (Figure 3, element 320) comprising a plurality of structures (Figure 3, element 310).

Moshrefzadeh et al. teaches the salient features of the present invention, as explained above, except a first material and the plurality of structures comprise the first material and a plurality of light diffusing particles.

Zimmerman et al. (US Patent Number 5,481,385) discloses a first material (Figure 10, element 26) and the plurality of structures (Figure 10, element 28) comprise the first material (Figure 10, element 26) and a plurality of light diffusing particles (Figure 10, element 41).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to utilize the diffusion particles between the waveguides (i.e. plurality of structures), disclosed by Zimmerman et al. in combination with the plurality of structures disclosed by Moshrefzadeh et al., for the purpose of having a display device with higher contrast and less ambient light reflected back to the observer (Zimmerman et al., column 8, lines 29-31).

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

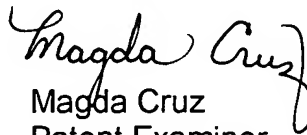
Zimmerman et al. (US Patent Number 5,521,726) discloses waveguides in an array that are separated by interstitial regions with a lower refractive index than the refractive index of the waveguides.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Magda Cruz whose telephone number is (571) 272-2114. The examiner can normally be reached on Monday through Thursday 8:00-5:30 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Judy Nguyen can be reached on (571) 272-2258. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Magda Cruz
Patent Examiner
Art Unit 2851

June 5, 2005